Winner: Control
Components
Category DataTuff TC
Cat 5e Cord Sets

2015
ENGINEERS'
CHOICE
AWARDS

BELDEN

Product Bulletin

PB 372

Belden® DataTuff® TC Cat 5e Cord Sets with UL 1277 Listed, Type TC 600V Industrial Ethernet Cable

Cord sets offer solutions for deployment in standard 600V cable tray installations to reduce installation costs and increase reliability.

Belden's DataTuff TC Cat 5e Cord Sets Are First in the Market to Address Today's Demanding Industrial Requirements.

Belden's DataTuff TC Cat 5e cord sets with TC Listed industrial Ethernet cable* address a long-standing challenge—the ability to easily route industrial Ethernet cables in the most demanding heavy-industrial environments using existing 600V cable trays. In addition, the new cord sets are shielded to provide maximum performance in high-noise areas.

The cord sets are targeted at both OEMs and end users. The Cat 5e TC Listed cable, rated at 600V, meets National Electric Code (NEC) requirements for deployment in standard 600V cable trays. The cord sets stand up under demanding deployments in heavy industrial applications such as transportation infrastructure and installations in heavy vehicles, mining and oil and gas. It is an ideal solution for Power over Ethernet (PoE), audio and video installations in harsh environments, and extended distance encoder cable runs.

Breakthrough Design

The DataTuff TC Cat 5e cord sets are the first to address requirements for monitoring and control in emerging industrial Ethernet applications such as motor control centers (MCCs), electrical switch gears, and electrical equipment, machinery and tray installations. As heavy equipment is migrating to Ethernet controls, it is important to make sure that communications signals travel with a minimum of interference, physical or electrical, through the plant or field installation.
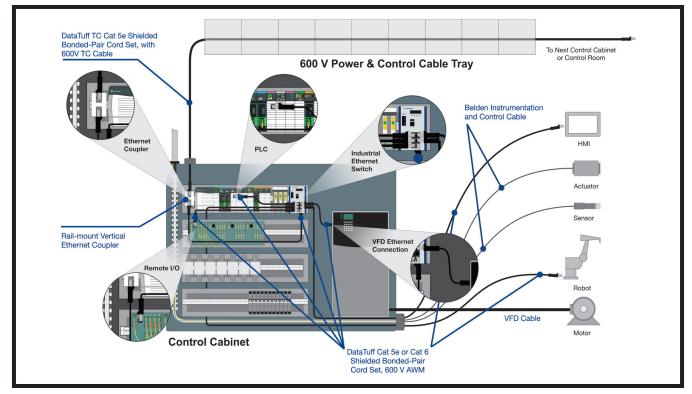
The Ethernet specification TIA 568-C.2 references 22-26 AWG conductors. Traditional industrial-grade Ethernet cables do not meet NEC requirements for routing through standard 600V cable trays. Belden brought its resources to bear to engineer a cable that is fully compliant with Category 5e requirements

*DataTuff TC Cat 5e Cord Sets are intended for communication applications and are not intended for 600V power delivery.

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DataTuff® TC Cat 5e Cord Sets

Industrial Cable - Installation Example (UL 1277 Listed, Type TC 600V Industrial Ethernet Cable)

of TIA 568-C.2 using 18 AWG conductors to provide the required 600V TC UL 1277 Listing for routing through cable trays. This cable is created to the same exacting standards as other DataTuff products using Belden's patented Bonded-Pair technology.

The DataTuff TC cord sets eliminate the need for creative communications cable deployments. Ethernet cables have been routed through conduits, through separate trays, attached to water pipes with ties or tape or otherwise deployed using unconventional methods. These make-do solutions both added to the expense of installation and introduced a potentially higher likelihood of field failures.

The DataTuff TC Cat 5e cord sets can be easily deployed in pre-existing 600V cable trays for cost-effective installation. This cabling solution also offers IP20 Din Rail mounted connectivity, with either an RJ45 coupler or an RJ45 to punch down connector. This provides convenient interconnect from the

DataTuff TC Cat 5e cord sets to the standard DataTuff cord sets. IP20 shielded Cat 5e and Cat 6 cord sets with male/male RJ45 connectors are available.

Features

The DataTuff TC Cat 5e cord set features include:

- UL 1863 Listed communication circuit accessory
- UL 1277 Listed, Type TC 600V cable
- UL 444 CMR/CMX outdoor
- Foil and braid shield for excellent EMI/RFI noise immunity
- Bonded-Pair technology for robust electrical performance
- Oil Res II and sunlight-resistant TPE Jacket
- C(UL) CMG, IEEE 1202 & FT4 flame rating
- MSHA mining approved
- UL 1581 -40˚ C cold bend
- UL rated to 90˚ C
- RoHS compliant, CE approved

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The factory-built IP20 cord sets come with RJ45-compatible connectors, designed by Belden to work with the heavier-gauge conductors. The cord sets are available in a wide variety of standard lengths. Custom orders are also accepted. All cord sets come with a factory warranty that guarantees trouble-free connectivity.

The Industrial Ethernet Challenge

As industrial Ethernet has penetrated more deeply into industrial applications, the challenge of deploying cable safely, effectively and reliably has grown. As Ethernet connectivity gained in popularity in manufacturing, power utilities, oil and gas, transportation and other industrial applications, the types of equipment attached to network cables have expanded significantly. MCCs, mobile equipment, oil and gas and mining applications often present environments where both equipment and the cabling that connects it requires extra protection and resilience.

In the industrial world, despite harsh and hazardous environments, there is no margin for error. Ethernet cables carry signals between devices that must arrive accurately and on time, because they precisely monitor and control equipment. Belden DataTuff products are designed to withstand the stresses and challenges encountered in the industrial environment, and the new DataTuff TC Cat 5e cord sets are no exception. The unique design characteristics of these cord

sets make them applicable for heavy industrial mobile equipment, as well as machinery and vehicle deployment. The expansion of Ethernet control systems for heavy equipment in harsh and extreme environments requires a robust cable system.

There are three classic failure models for cables: catastrophic failure, intermittent operation or incremental failure and degradation of performance. Failure in an industrial environment could result in loss of data, process downtime or a drop in the safety level of the operation. Any of these is unacceptable. Belden's products are proven reliable, and the new DataTuff TC Cat 5e cord sets have undergone extensive testing and certification to ensure the highest possible performance.
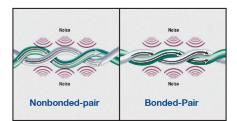
Bonded-Pair Advantage

A key feature of the DataTuff product line is Belden's patented Bonded-Pair technology, which has unparalleled electrical characteristics. The major benefit of Bonded-Pair technology is superior and consistently reliable electrical performance.

Bonded-Pair technology affixes the conductor insulation of the cable pairs along their longitudinal axes to ensure that no performance-robbing gaps can develop between the conductor pairs. Bonding the conductor insulation of the cable pairs ensures that the conductor-to-conductor spacing, or centricity, is always uniform.

Bonding means that the cable offers excellent and consistently reliable electrical performance—even after it has been subjected to the bending, pulling and twisting that are inherent in the installation process. For more information on installation stresses, download a copy of Technical Bulletin TB-66, "The Impact of Installation Stresses on Cable Performance."

Additionally, when non-bonded pairs seperate, an impedance mismatch occurs, increasing the return loss. This can significantly impact the performance of an active network, reduce network efficiency and lead to excessive bit error rates.

For more information on Belden's industrial Ethernet cable products and its Bonded-Pair technology, see Belden Product Bulletins PB 231, "Industrial Ethernet"and PB 315, "Belden DataTuff Industrial Ethernet Connectivity Tools & Accessories" and Capabilities Brochure CB006, "Bonded-Pair Technology."

Bonded-Pairs (right) have greater immunity to noise because they do not have gap points where noise can invade.

DataTuff® TC Cat 5e Cord Sets

| **DataTuff TC Cat 5e Cord Sets**, 18AWG, SF/UTP, IP20 | | **DataTuff Cat 5e Cord Sets**, 600V AWM, 24 AWG, SF/UTP, IP20 or IP67 | | | **DataTuff Cat 5e Cord Sets**, 600V AWM, 24 AWG, F/UTP, IP20 or IP67 | | | **DataTuff Cat 6e Cord Sets**, 600V AWM 23 AWG, F/UTP, IP20 or IP67 | | |

Part Number	Length	Part Number	IP Rating	Length	Part Number	IP Rating	Length	Part Number	IP Rating	Length
EV502T1 B59003	3M	E509001 010S1	IP20	1M	E505001 010S1	IP20	1M	E605001 010S1	IP20	1M
EV502T1 B59005	5M	E509002 010S1	IP20	2M	E505002 010S1	IP20	2M	E605002 010S1	IP20	2M
EV502T1 B59010	10M	E509003 010S1	IP20	3M	E505003 010S1	IP20	3M	E605003 010S1	IP20	3M
EV502T1 B59020	20M	E509005 010S1	IP20	5M	E505005 010S1	IP20	5M	E605005 010S1	IP20	5M
EV502T1 B59030	20M	E509010 010S1	IP20	10M	E505010 010S1	IP20	10M	E605001 010S1	IP20	10M
EV502T1 B59040	40M	E508001 010S1	IP67	1M	E504001 010S1	IP67	1M	E604001 010S1	IP67	1M
EV502T1 B59050	50M	E508002 010S1	IP67	2M	E504002 010S1	IP67	2M	E604002 010S1	IP67	2M
EV502T1 B59060	60M	E508003 010S1	IP67	3M	E504003 010S1	IP67	3M	E604003 010S1	IP67	3M
EV502T1 B59070	70M	E508005 010S1	IP67	5M	E504005 010S1	IP67	5M	E604005 010S1	IP67	5M
EV502T1 B59080	80M	E508010 010S1	IP67	10M	E504010 010S1	IP67	10M	E604010 010S1	IP67	10M
EV502T1 B59090	90M									
EV502T1 B59100	100M									

DataTuff Cat 5e Ruggedized Cord Sets
600V AWM, 24 AWG, SF/UTP, IP20

Part Number	Length
R509001 010S1	1M
R509002 010S1	2M
R509003 010S1	3M
R509005 010S1	5M
R509010 010S1	10M

DIN Rail Connectors

Part Number	Description		Part Number	Description
E100A21	Cat 6a DIN Rail FTP Jack		E100623	Cat 6 DIN Rail FTP Coupler

Key to Color Code
All cord sets are shown in black. Find the part number for red, blue, gray and teal using this key.

TC Cord sets (EV)		Part Color No.	Color
B59	**003**	002	Red
Color	Length	006	Blue
E509, E505 & E605 Cord Sets		008	Gray
003	**010**	010	Black
Length	Color	B59	Matte Black
		1NH	Teal